

ory of supply suggests the following general specification for the inverse supply curve of the fringe:

$$P = P_F(Q_F, PA, EA). \quad (3)$$

Here, Q_F is the fringe output, PA is the price long-distance firms pay to the local exchange companies on a minutes-of-use basis for access to the local network, and EA is the percentage of telephone lines converted to equal access. Carrier access is the predominant input required for the production of long-distance service, generally accounting for over half of these firms' total costs (and even more of their marginal costs). Thus, $\partial P_F / \partial PA > 0$ is expected to hold.

As noted above, the primary source of product differentiation in the post-divestiture long-distance industry has been the lack of dialing parity between AT&T and its rivals. To explicitly account for this element of product differentiation, we include a measure of the proliferation of equal access (EA) in the long-distance industry over time. We expect that, as the degree of product homogeneity increases with growth in the extent of equal access, the ability of fringe suppliers to expand their output is increased, *ceteris paribus*, and price pressure on the dominant firm will grow. Accordingly, we expect that $\partial P_F / \partial EA < 0$. That is, equal access shifts fringe supply outward.

Finally, because fringe supply is expected either to slope upward or to be horizontal, $\partial P_F / \partial Q_F \geq 0$ should hold. It is this last parameter, of course, that is the primary focus of our attention, because it reveals the ability and willingness of AT&T's competitors to enter and expand in response to any attempted price increases. That ability, in turn, is a primary determinant of AT&T's market power. The closer this parameter is to zero (that is, the more elastic is fringe supply), the lower are barriers to entry and expansion and, therefore, the greater the intensity of potential competition. Conversely, a large positive coefficient on Q_F would indicate a relatively inelastic fringe supply with comparatively ineffective potential competition.

Turning to the inverse market demand function for long-distance service, we specify

$$P = P_M(Q_M, P_L, \text{PHONE}, \text{PHONESQ}, Y, D_i), \quad (4)$$

where Q_M is the market quantity, P_L is an index of real prices for local telephone service, PHONE is the number of U.S. households that subscribe to telephone service, PHONESQ is the square of PHONE , Y is real per capita income, and D_i is a vector of three quarterly dummies. We expect market demand to slope downward. We expect increases in the price of local telephone service to reduce the demand for long-distance service due to the

complementary nature of these products.²⁰ We expect increases in household subscribership generally to increase market demand. We allow for a nonlinear (quadratic) relationship between subscribership and demand due to the network characteristic of telecommunications consumption—a doubling of subscribers is likely to more than double the market demand. Finally, we expect increases in income to increase long-distance demand. Thus, our hypotheses regarding equation (4) are that $\partial P_W / \partial Q_M < 0$, $\partial P_W / \partial P_L < 0$, $\partial P_W / \partial \text{PHONE} > 0$, and $\partial P_W / \partial Y > 0$. No hypotheses are expressed with respect to D_i . Our primary interest will be in the parameter associated with Q_M due to its relationship to the market price elasticity of demand and the corresponding relationship of that elasticity to the Lerner index.

Equations (3) and (4) constitute a simultaneous DF/CF model with P , Q_M , and Q_F endogenous. The exogenous variables included in this system are PA , EA , P_L , PHONE , PHONESQ , Y , and D_i .²¹ Estimation of these two structural relationships provides estimates of η_M and ϵ_F that, together with observed values of S_{ATT} , can be used to calculate η_{ATT} via equation (2). This elasticity of residual demand, in turn, can be used to calculate the Lerner index for AT&T in the postdivestiture period.

III. DATA AND ESTIMATION RESULTS

Within the framework of the DF/CF model, the market price, the quantity supplied by fringe firms, and the market quantity are determined simultaneously. Thus, estimation of the fringe supply and market demand functions with ordinary least squares would produce inconsistent and biased parameter estimates. Accordingly, we utilize two-stage least squares (2SLS) to estimate the model. The data used for this estimation are quarterly observations covering the time period from 1984:3 through 1993:4. Thus, our sample contains 38 observations. Appendix Table A1 provides our variable definitions and data sources.

Estimation results for the fringe supply curve in linear form with 2SLS are reported in Table 1.²² The explanatory power of the model is quite high,

²⁰ Jerry Hausman, Timothy Tardiff, & Alexander Belinfante, *The Effects of the Breakup of AT&T on Telephone Penetration in the United States*, 83 *Am. Econ. Rev.* 178, 184 (1993), report empirical evidence of such complementarity.

²¹ An examination of the estimating equations indicates that the fringe supply is overidentified and the market demand equation is exactly identified. In this context, two-stage least squares is an appropriate estimation technique. See, for example, Jan Kmenta, *Elements of Econometrics* (2d ed. 1986).

²² The model was also estimated with three-stage least squares (3SLS). Because the 3SLS results are virtually identical to the 2SLS results, we report only the latter here. Also, the model was estimated using both linear and double-log specifications. Because the basic results are invariant to the specification, we report the estimations from the linear specification.

TABLE 1
INVERSE FRINGE SUPPLY EQUATION: TWO-STAGE LEAST
SQUARES ESTIMATES

Variables	Coefficient	t-Statistic
Intercept	.059	1.921**
Q_F	.002	3.346*
PA	1.860	11.293*
EA	-.001	-6.173*
R^2	.99	

* Significant at the .01 level.

** Significant at the .10 level.

and all coefficients attain the expected signs. Moreover, all parameters are statistically significant. The positive sign on the coefficient of Q_F indicates an upward-sloping fringe supply. The positive sign on the coefficient of PA suggests that fringe supply shifts backward with increases in the price of the principal input (that is, access). The negative sign attached to the coefficient of EA confirms our expectation that the provision of equal access and the commensurate decreases in the degree of product differentiation increase fringe supply.

Most important, the 2SLS results produce a fringe supply elasticity estimate of 4.38 at the sample means. Thus, our results suggest a large supply response to a price change on the part of fringe firms in this industry.²³ This finding, in turn, is consistent with prior arguments that have posited an absence of significant barriers to entry and expansion in this industry.²⁴

Next, Table 2 reports our estimation results for the interstate long-distance telecommunications market demand function using 2SLS. Here, too, the results appear to be quite reasonable. The model exhibits considerable explanatory power, and all hypothesized coefficient signs are obtained.

²³ This finding that the elasticity of fringe firm supply in the long-distance industry is large is corroborated by an examination of marketplace data regarding barriers to entry and expansion of fringe firms in the postdivestiture period. Specifically, the phenomenal growth in the number of firms indicates that entry into the long-distance industry is not difficult. Moreover, these new entrants have sustained a decade-long compound annual growth rate (based on minutes sold) of roughly 20 percent, indicating that barriers to expansion are minimal. At the same time, the amount of capacity deployed in the long-distance market has expanded very rapidly. See Federal Communications Commission (FCC), Fiber Deployment Update—End of Year 1993 (unpublished report, FCC, May 1994); and AT&T Bell Laboratories, An Update Study of AT&T's Competitors' Capacity to Absorb Rapid Demand Growth (unpublished manuscript, AT&T, April 1995). As a consequence, fringe firms either own or have access to large amounts of capacity with which they can easily expand output.

²⁴ Katz & Willig, *supra* note 3; Porter, *supra* note 3; and Kaserman & Mayo (Long-Distance Telecommunications Policy; Long-Distance Telecommunications; Competition and Asymmetric Regulation, all *supra* note 3), among others, have made such arguments.

TABLE 2
INVERSE MARKET DEMAND EQUATION: TWO-STAGE
LEAST SQUARES ESTIMATES

Variables	Coefficient	t-Statistic
Intercept	9.313	5.747*
Q_M	-.006	-4.655*
P_L	-.003	-5.063*
PHONE	-.206	-5.642*
PHONESQ	.001	6.630*
Y	1.07×10^{-5}	5.104*
D_2	.002	.625
D_3	.009	2.152**
D_4	.009	2.107*
R^2	.99	
F	737.043	
Durbin-Watson	1.808	

* Significant at the .01 level.

** Significant at the .05 level.

Moreover, all coefficients except the second-quarter dummy are significant at the .05 level or higher. These results confirm a downward-sloping market demand that declines with higher local telephone rates. The coefficients attached to PHONE and PHONESQ suggest a U-shaped relationship between subscribership and long-distance demand. At the sample mean, however, $\partial P/\partial \text{PHONE} = 0.0093 > 0$, and $\partial^2 P/\partial \text{PHONE}^2 = 0.002 > 0$. Thus, at these values, demand increases at an increasing rate as subscribership rises. This result is consistent with theoretical expectations for products subject to network externality effects. Finally, long-distance demand increases with per capita income (it is a normal good) and is significantly higher in the third and fourth quarters.

For our purposes, the result that is of primary importance is the market price elasticity of demand. At the sample means, the results reported in Table 2 yield an elasticity estimate of -0.49 . Given the time-series nature of our data, this estimate should correspond to a short-run demand elasticity. Accordingly, this figure conforms with, but is at the low end of the range of, elasticities for this market reported in a recent survey of telecommunications demand studies.²⁵ Consequently, use of this relatively low market price elasticity estimate will tend to bias our Lerner index calculations upward.

²⁵ Lester D. Taylor, *Telecommunications Demand in Theory and Practice* 17 (1994), states that, "[i]n general, these new studies show price elasticities of -0.5 to -0.75 for interLATA (i.e., longer-haul) toll calling." Also, see J. P. Gatto *et al.*, *Intrastate Switched Access Demand*, 3 *Info. Econ. & Pol'y* 333, 358 (1988).

IV. RESIDUAL DEMAND ELASTICITY AND MARKET POWER CALCULATIONS

Given the above estimates of ϵ_F and η_M and knowledge of AT&T's market share, S_{ATT} , we can calculate estimates of AT&T's residual demand elasticity and corresponding estimates of the Lerner index for this firm. Market share figures are generally based upon either output or capacity.²⁶ Federal Communications Commission figures indicate an output-based market share for AT&T at the end of 1993 of 60 percent, while AT&T's share of industry assets was equal to approximately 40 percent.²⁷

From these two alternative values of S_{ATT} , we can substitute the estimated values of ϵ_F and η_M into equation (2). These substitutions yield values of AT&T's residual demand elasticity of -3.73 and -7.81 , for the output-based and capacity-based market shares, respectively. The corresponding values of the Lerner index (λ), then, are .29 and .13. Given that the theoretical range of the Lerner index is from zero to unity, the relatively low values of these estimates suggest that AT&T does not possess significant market power in the pricing of long-distance services.²⁸

These Lerner index figures, however, are somewhat difficult to interpret in isolation. To gain a better perspective on what these numbers imply, it is useful to compare them with similar estimates for other industries. Fortunately, two recent studies provide a basis for such comparison. First, a paper by Hall reports estimates of the ratio of marginal cost to price for 26 U.S. industries.²⁹ As seen in Table 3, Hall's estimates can easily be transformed into estimates of the Lerner index for these industries.³⁰

²⁶ See, for example, the Department of Justice and Federal Trade Commission 1992 Horizontal Merger Guidelines, which, depending on the particular circumstances prevalent in a market, state that these agencies will use either total sales or capacity to calculate market shares. Capacity-based market share calculations have greater information content in the long-distance telecommunications market. See Herbert Hovenkamp, *Antitrust Analysis of Market Power, with Some Thoughts about Regulated Industries*, in *Telecommunications Deregulation: Market Power and Cost Allocation Issues* 7, 8 (John R. Allison & Dennis L. Thomas eds. 1987).

²⁷ Output-based market shares are reported in FCC, *supra* note 9. An estimate of AT&T's asset-based market share is found in John Haring & Kathleen Levitz, *What Makes the Dominant Firm Dominant?* (working paper, Federal Communications Commission, Office of Plans and Policies 1989). Corroboration for the asset-based market share statistic is found in FCC, *supra* note 23; and AT&T Bell Laboratories, *supra* note 23.

²⁸ Interestingly, Ward, *supra* note 2, uses an alternative econometric model and different data to quantify the magnitude of AT&T's own-price elasticity and its associated Lerner index with results very similar to those reported here.

²⁹ See Robert E. Hall, *The Relation between Price and Marginal Cost in U.S. Industry*, 96 J. Pol. Econ. 921, 947 (1988).

³⁰ The study by Hall, *id.*, is built on a number of simplifying assumptions and utilizes Census Bureau Standard Industrial Classification (SIC) definitions of industries. Thus, his estimates regarding the degree of market power in any particular industry should be inter-

TABLE 3
HALL'S MARKET POWER ESTIMATES FOR OTHER (UNREGULATED) INDUSTRIES

Industry	β (MC/P)	λ (P - MC)/P = 1 - β	η P/(P - MC) = 1/ λ
Food and kindred products	.189	.811	1.23
Tobacco manufactures	.362	.638	1.57
Textile mill products	.388	.612	1.63
Apparel and other textile	1.213	-.123	-4.69
Lumber and wood products	.555	.445	2.25
Furniture and fixtures	.506	.494	2.02
Paper and allied products	.269	.731	1.37
Printing and publishing	.07	.93	1.08
Chemicals and allied products	.05	.95	1.05
Petroleum and coal products	-.007	1.007	.99
Rubber and miscellaneous	.663	.337	2.97
Leather and leather products	.476	.524	1.91
Stone, clay, and glass products	.394	.606	1.65
Primary metal industries	.46	.54	1.85
Fabricated metal products	.607	.393	2.54
Machinery, except electrical	.7	.3	3.33
Electrical and electronic	.324	.676	1.48
Instruments and related	.716	.284	3.52
Miscellaneous manufacturing	.223	.777	1.29
Communication	.028	.972	1.02
Electric, gas, and sanitary	.079	.921	1.09
Motor vehicles and equipment	.567	.433	2.31
Other transportation equipment	1.053	-.053	-18.87
Transportation	.251	.749	1.34
Wholesale trade	-.271	1.271	.79
Retail trade	.425	.575	1.74

SOURCES.—Robert E. Hall, The Relation between Price and Marginal Cost in U.S. Industry, 96 J. Pol. Econ. 921, 947 (1988); and authors' calculations.

Comparing Hall's estimates to our estimates for AT&T, we find that, relative to these other industries, AT&T possesses remarkably little market power. The mean value of our Lerner index estimates is .20 for AT&T, while the mean of the 22 industries for which Hall's estimates fall within the theoretically acceptable range (that is, for which $0 \leq \lambda < 1$) is .62. Moreover, the maximum estimate of λ we obtain for AT&T is .29. This value is below every single industry in Hall's sample that generated a Lerner index value within the acceptable range, with the single exception of

preted cautiously. For example, local telephone exchange, long-distance, and cable television operations are combined to yield an aggregated estimate for "Communications." An additional caveat to the use of Hall's estimates stems from the fact that they are built on a data series that ends in 1984. Despite these caveats, Hall's Lerner index values nonetheless provide a useful benchmark for comparison purposes.

TABLE 4
BRESNAHAN'S SURVEY OF PRIOR EMPIRICAL ESTIMATES OF LERNER INDICES

Author	Industry	λ
Lopez (1984)	Food processing	.504
Roberts (1984)	Coffee roasting	.055/.025*
Appelbaum (1982)	Rubber	.049
Appelbaum (1982)	Textile	.072+
Appelbaum (1982)	Electrical machinery	.198+
Appelbaum (1982)	Tobacco	.648+
Porter (1983)	Railroads	.40±
Slade (1987)	Retail gasoline	.10
Bresnahan (1981)	Automobiles (1970s)	.1/.34§
Suslow (1986)	Aluminum (interwar)	.59
Spiller-Favaro (1984)	Banks "before"	.88/.21*
Spiller-Favaro (1984)	Banks "after"	.40/.16*

SOURCE.—For full author citations, see Timothy F. Bresnahan, *Empirical Studies of Industries with Market Power*, in 2 *Handbook of Industrial Organization* (Richard Schmalensee & Robert Willig eds. 1989).

* Largest and second largest firm, respectively.

+ At sample midpoint.

± When cartel was succeeding; 0 in reversionary periods.

§ Varies by type of car; larger in standard, luxury segment.

Uruguayan banks before and after entry deregulation.

* Large firms/small firms (see their table 2).

Instruments and Related Products.³¹ Thus, relative to these other industries (virtually all of which are unregulated), AT&T appears to face very effective competition.

Finally, Bresnahan's survey of prior empirical studies of market power in individual industries presents a table summarizing the Lerner indices estimated by various authors.³² We reproduce the results of that survey in Table 4. Almost a dozen industries are represented. The range of estimated market power is quite broad, with the Lerner index ranging from a low of .025 to a high of .88. Nonetheless, our estimates of AT&T's Lerner index clearly fall toward the low end of the reported indices. The mean Lerner index reported in Bresnahan is .296, which is slightly above even our maximum estimate for AT&T. Thus, this second comparison also supports the

³¹ Stefan Norrbin, *The Relation between Price and Marginal Cost in U.S. Industry: A Contradiction*, 101 *J. Pol. Econ.* 1149, 1164 (1993), modifies Hall's analysis and generates considerably lower price-marginal cost markups and implied Lerner index values for U.S. industries. Even employing the values from Norrbin's analysis, however, AT&T's Lerner index values are in the middle of the pack for nonregulated industries in the United States.

³² See Bresnahan, *supra* note 4, at 1051, table 17.1.

conclusion that, relative to other firms in the U.S. economy, AT&T possesses very little market power.

V. CONCLUSIONS AND CAVEATS

At the time of the divestiture of the BOCs from AT&T, considerable debate emerged concerning the long-run viability of competition in the long-distance telecommunications industry. In the period since divestiture, that debate has shifted to a consideration of the intensity of competition faced by the former monopoly supplier of long-distance service. To date, however, the arguments presented have proceeded primarily on a priori theoretical grounds pertaining to conditions of natural monopoly and largely ad hoc analyses of the emerging structural characteristics of the industry. While evidence of this nature is valuable in attempting to resolve this important public policy issue, it is important to attempt to corroborate such information with empirical studies as the requisite data become available. In this spirit, we have employed the DF/CF model to estimate both fringe supply and market demand elasticities in the interstate long-distance telecommunications market. We have employed the resulting elasticity estimates along with extant information on AT&T's market share to calculate empirical estimates of AT&T's market power.

As with any empirical analysis, our results should be interpreted in the light of several caveats. First, our data series is relatively short, with only a 10-year window of observations. Ironically, given the empirical propensity of dominant firms to decline, the benefits of a longer time series may ultimately be offset by a declining applicability of the underlying DF/CF model to this industry. Thus, the window of opportunity for modeling this industry with the DF/CF model may be waning as the industry structure evolves.

Second, as with other industries that have experienced the transition from regulated monopoly to competition, new pricing structures are emerging in the long-distance industry that limit the relevance of "list" prices. A noticeable deviation of average revenue per minute (that is, the actual transactions price) of long-distance service sold and the basic tariffed price began to emerge at the end of our sample period with the introduction of a variety of discount pricing plans by long-distance suppliers. To the extent that competition has increasingly driven transactions prices below the basic tariffed prices used in this study, our results regarding the competitive discipline imposed by the various competitors to the "dominant" firm are strengthened, and our empirical conclusions are seen to be quite conservative.

Third, while the theoretical construct is ideally designed to model the

market power held by AT&T for the set of long-distance services provided, the empirical model and data are limited to basic tariffed rates that apply to residential and small business consumers. Other services (for example, WATS) designed for use by high-volume consumers and discount programs available to residential customers are excluded from the empirical analysis. It is generally conceded that competition for these high-end services is keen and that no carrier has significant market power over these services.³³ To the extent, then, that our empirical model is focused on the low-volume end of the market, our estimates of the Lerner index will, again, tend to err on the high side.

Yet another caveat stems from the presence of regulation in the long-distance market. Specifically, our estimation of the Lerner index is predicated on the ability of the dominant firm to be able to equate marginal cost and the marginal revenue associated with the residual demand curve. To the extent that regulation may be binding, the profit-maximizing price of the dominant firm will be higher than observed prices and the corresponding estimate of the Lerner index is too low. Given, however, the previous empirical research demonstrating that relaxing regulatory controls in this market leads to *lower* prices, any distortions to our Lerner value estimates, if any, are likely to be minimal.³⁴

With these caveats noted, we conclude by suggesting that the approach adopted here of simultaneous estimation of fringe firm supply and market demand elasticities, when combined with marketplace data on market shares, offers a new and potentially useful tool for market power evaluations when more conventional residual demand estimation methods are unavailable.

³³ For a discussion, see Federal Communications Commission, Report and Order, CC Docket 93-197 (1995).

³⁴ See Alan D. Mathios & Robert P. Rogers, The Impact of Alternative Forms of State Regulation of AT&T on Direct-Dial, Long-Distance Telephone Rates, 20 RAND J. Econ. 437, 453 (1989); and Robert Kaestner & Brenda Kahn, The Effects of Regulation and Competition on the Price of AT&T Intrastate Telephones Service, 2 J. Regulatory Econ. 363, 377 (1990). Neither of these papers controls for the possibility of endogeneity in the choice of regulatory regime and may, therefore, contain flawed inferences regarding the impact of regulation on prices. An independent and correctly specified test of whether, and the extent to which, regulation is binding is beyond the scope of the present article. As noted by Ward, *supra* note 2, however, prices for residential and small business services were at their cap for only a relatively small portion of the 1989-91 period. This observation tends to corroborate these prior authors' finding that regulation was not binding during this period.

APPENDIX

TABLE A1

VARIABLE NAMES AND DEFINITIONS

Variable	Definition	Source
Q_M	Interstate switched access minutes of all long-distance carriers	b
P_L	Real consumer price index for local telephone service (1982 - 1984 = 100)*	a
PHONE	Number of households with telephone service, measured in millions	b
PHONESQ	PHONE*PHONE	
Q_F	Interstate switched-access minutes by carriers other than AT&T	b
PA	Real price of total access charges per conversation minute†	a
P	Average daytime real price of AT&T's long distance interstate telephone service for a 10-minute 200-mile call‡	a
EA	Percentage of total industry lines converted to equal access	b
Y	Real disposable per capita income§	c
D_i	Quarterly dummies, $i = 2, 3, 4$	

SOURCES.—(a) Federal Communications Commission, Common Carrier Bureau, Industry Analysis Division, Reference Book: Rates, Indexes, and Household Expenditure for Telephone Services (May 1993); (b) Federal Communications Commission, Statistics of Communications Common Carriers, 1991/1992 ed. (released January 1993); (c) Economic Report of the President (1985-94).

* P_L is calculated by deflating the nominal consumer price index for local telephone service with the consumer price index for all goods and services.

† P_A includes originating carrier common line charges, terminating carrier common line charges, and traffic sensitive charges. Note also that P_A is calculated by deflating nominal access charges with the implicit price deflator.

‡ Real prices are calculated by deflating nominal prices with the implicit price deflator.

§ Real per capita income is calculated by dividing nominal per capita income with the implicit price deflator (1982 = 1).

BIBLIOGRAPHY

- Allen, Robert E. Testimony before the U.S. Senate Committee on Commerce, Science, and Transportation, Subcommittee on Telecommunications, September 8, 1993. 103d Congress, 1st Session.
- AT&T Bell Laboratories. "An Updated Study of AT&T's Competitors' Capacity to Absorb Rapid Demand Growth." Unpublished report. Basking Ridge, N.J. AT&T Bell Laboratories, April 1995.
- Baker, Jonathan B., and Bresnahan, Timothy F. "Estimating the Residual Demand Curve Facing a Single Firm." *International Journal of Industrial Organization* 6 (1988): 283-300.
- Baker, Jonathan B., and Bresnahan, Timothy F. "Empirical Methods of Identifying and Measuring Market Power." *Antitrust Law Journal* 61 (1992): 3-16.
- Blank, Larry; Kaserman, David L.; and Mayo, John W. "Dominant Firm Pricing

- with Competitive Entry and Regulation: The Case of IntraLATA Toll." Unpublished manuscript. Knoxville: University of Tennessee, 1995.
- Bresnahan, Timothy F. "Empirical Studies of Industries with Market Power." Chapter 17 in *Handbook of Industrial Organization*, Vol. 2, edited by R. Schmalensee and R. D. Willig. Amsterdam: North-Holland Publishers, 1989.
- Federal Communications Commission. Common Carrier Bureau. Industry Analysis Division. "Long Distance Market Share." Unpublished report. Washington, D.C.: Federal Communications Commission, 1992/93.
- Federal Communications Commission. Common Carrier Bureau. Industry Analysis Division. "Fiber Deployment Update—End of Year 1993." Unpublished report. Washington, D.C.: Federal Communications Commission, May 1994.
- Gatto, J. P.; Langin-Hooper, J.; Robinson, P. B.; and Tryan, H. "Interstate Switched Access Demand." *Information Economics and Policy* 3 (1988): 333–58.
- Hall, Robert E. "The Relation between Price and Marginal Cost in U.S. Industry." *Journal of Political Economy* 96 (1988): 921–47.
- Hall, Robert E. "Long Distance: Public Benefits from Increased Competition." Unpublished manuscript. Menlo Park, Calif.: Applied Economics Partners, 1993.
- Haring, John, and Levitz, Kathleen. "What Makes the Dominant Firm Dominant?" Working paper. Washington, D.C.: Federal Communications Commission, Office of Plans and Policy, 1989.
- Hausman, Jerry A. "The Long-Distance Markets Today." Unpublished manuscript. Cambridge: Massachusetts Institute of Technology, November 12, 1993.
- Hausman, Jerry; Tardiff, Timothy; and Belinfante, Alexander. "The Effects of the Breakup of AT&T on Telephone Penetration in the United States." *American Economic Review* 83 (1993): 178–84.
- Hovenkamp, H. "Antitrust Analysis of Market Power with Some Thoughts about Regulated Industries." In *Telecommunications Deregulation: Market Power and Cost Allocation Issues*, edited by J. R. Allison and D. L. Thomas. Cambridge, Mass.: Ballinger Publishing Co., 1987.
- Kaestner, R., and Kahn, B. "The Effects of Regulation and Competition on the Price of AT&T Intrastate Telephone Service." *Journal of Regulatory Economics* 2 (1990): 363–77.
- Kaserman, David L., and Mayo, John W. "Long Distance Telecommunications Policy: Rationality on Hold." *Public Utilities Fortnightly* 122 (December 22, 1988): 18–27.
- Kaserman, David L., and Mayo, John W. "Long-Distance Telecommunications: Expectations and Realizations in the Post-divestiture Period." In *Incentive Regulation for Public Utilities*, edited by Michael A. Crew. Boston, Mass.: Kluwer Academic Publishers, 1994.
- Kaserman, David L., and Mayo, John W. "Competition and Asymmetric Regulation in Long Distance Telecommunications: An Assessment of the Evidence." *Comm Law Conspectus* 4 (1996): 1–26.
- Katz, M. L., and Willig, R. D. "The Case for Freeing AT&T." *Regulation* (July–August 1984): 43–49.
- Kmenta, Jan. *Elements of Econometrics*. 2d ed. New York: Macmillan Publishing Co., 1986.

- MacAvoy, Paul W. "Tacit Collusion under Regulation in the Pricing of Interstate Long-Distance Telephone Services." *Journal of Economics and Management Strategy* 4 (1995): 147-85.
- Mathios, A. D., and Rogers, R. P. "The Impact of Alternative Forms of State Regulation of AT&T on Direct-Dial, Long-Distance Telephone Rates." *RAND Journal of Economics* 20 (1989): 437-53.
- Norrbin, Stefan. "The Relation between Price and Marginal Cost in U.S. Industry: A Contradiction." *Journal of Political Economy* 101 (1993): 1149-64.
- Porter, Michael E. "Competition in the Long Distance Telecommunications Market." Unpublished report. N.p.: Monitor Company, September 1993.
- Porter, Michael E. "Competition in the Long Distance Market: An Industry Structure Analysis." Unpublished report. N.p.: Monitor Company, 1990.
- Salop, Steven C.; Brenner, Steven R.; and Roberts, Gary L. "Market Power in the Supply of Long-Distance Telephone Services." Unpublished manuscript. Boston, Mass.: Charles River Associates, 1990.
- Saving, Thomas R. "Concentration Ratios and the Degree of Monopoly." *International Economic Review* 11 (1970): 139-46.
- Scheffman, David T., and Spiller, Pablo T. "Geographic Market Definition under the U.S. Department of Justice Merger Guidelines." *Journal of Law and Economics* 30 (1987): 123-47.
- Scherer, F. M., and Ross, David. *Industrial Market Structure and Economic Performance*. 3d ed. Boston: Houghton Mifflin Co., 1990.
- Shepherd, William G. "Long-Distance Telephone Service: Dominance in Decline?" In *Industry Studies*, edited by Larry L. Duetsch, pp. 342-63. Englewood Cliffs, N.J.: Prentice Hall, 1993.
- Suslow, Valerie. "Estimating Monopoly Behavior with Competitive Recycling: An Application to ALCOA." *RAND Journal of Economics* 17 (1986): 389-403.
- Taylor, Lester D. "Pricing of Telecommunications Services: Comment on Gabel and Kennet." *Review of Industrial Organization* 8 (1993): 15-19.
- Taylor, Lester D. *Telecommunications Demand in Theory and Practice*. Boston, Mass.: Kluwer Academic Publishers, 1994.
- Ward, Michael R. "Measurements of Market Power in Long Distance Telecommunications." Staff report. Washington, D.C., Federal Trade Commission, Bureau of Economics, 1995.
- Worcester, Dean A. "Why 'Dominant Firms' Decline." *Journal of Political Economy* 65 (1957): 338-46.

Exhibit JWM-8
26 Pages

EXHIBIT JWM-8

**COMPETITION AND ASYMMETRIC REGULATION IN LONG-DISTANCE
TELECOMMUNICATIONS: AN ASSESSMENT OF THE EVIDENCE**

COMPETITION AND ASYMMETRIC REGULATION IN LONG-DISTANCE TELECOMMUNICATIONS: AN ASSESSMENT OF THE EVIDENCE

David L. Kaserman* and
John W. Mayo**

TABLE OF CONTENTS

I.	Introduction	1
II.	The Economic Rationale for Traditional Regulation and the Criteria for Relaxed Regulation	3
III.	Application of the Competitive Criteria to the Interexchange Services Market	8
IV.	Competition in the Interexchange Market: Other Empirical Evidence	11
	A. Relaxed Regulation: The State Evidence	11
	B. Relaxed Regulation: Business Services	13
	C. Direct Econometric Estimates of AT&T's Market Power	13
V.	Other Competitive/Policy Issues	15
	A. The Tacit Collusion Issue	15
	B. Predatory Pricing	20
	C. Low Volume/Rural Customers	21
VI.	Conclusion	22

I. INTRODUCTION

Prior to the entry of MCI into the long-distance market in 1969, AT&T supplied virtually all long-distance calling in the United States, as well as the predominant share of local exchange services. Accordingly, AT&T was subjected to traditional monopoly regulation by both federal and state regula-

tory authorities. As the number of interexchange carriers grew, however, the question of whether and how these new entrants into the long-distance market should be regulated arose. In 1980, in the Competitive Carrier Proceeding,¹ the Federal Communications Commission ("FCC" or "Commission") resolved the issue by adopting a policy which classified firms according to their ability to adversely af-

* Torchmark Professor of Economics, Auburn University. Ph.D., Economics, University of Florida, 1976.

** Professor of Economics, University of Tennessee. Ph.D., Economics, Washington University, 1982. An earlier version of this article was submitted by AT&T to the Federal Communications Commission on June 12, 1995, as an *ex parte* presentation in CC Docket No. 79-252.

¹ *In re Policy and Rules Concerning Rates for Competitive Carrier Services and Facilities Authorizations Therefor, Notice of Inquiry and Proposed Rulemaking*, 77 F.C.C.2d 308 (1979); *First Report and Order*, 85 F.C.C.2d 1 (1980); *Second Report and Order*, 91 F.C.C.2d 59 (1982); *Order on Recon.*, 93 F.C.C.2d 54 (1983); *Policy Statement and Third Report and Order*, 48 Fed. Reg. 46,791 (1983); *Fourth Report and Order*, 95 F.C.C.2d 554 (1983), *vacated and remanded*, AT&T v. FCC, 978 F.2d 727 (D.C. Cir. 1992), *cert. denied*, 113 S. Ct. 3020 (1993); *Fifth Report and Order*, 98 F.C.C.2d 1191 (1984); *Sixth Report and Order*, 99 F.C.C.2d 1020 (1985), *vacated and*

remanded, MCI Telecommunications Corp. v. FCC, 765 F.2d 1186 (D.C. Cir. 1985) [hereinafter *Competitive Carrier Proceeding*]. AT&T filed a motion in this docket to have its classification changed from a dominant carrier to a non-dominant carrier. *Motion for Reclassification of AT&T as a Nondominant Carrier*, in CC Dkt. No. 79-252 (Sept. 22, 1993); *Ex Parte Presentation in Support of AT&T's Motion for Reclassification as a Non-Dominant Carrier*, in CC Dkt. No. 79-252 (Apr. 24, 1995) [hereinafter *Ex Parte Presentation*] (reasserting the motion). On October 12, 1995, the FCC decided that it would now treat AT&T as a nondominant carrier for regulatory purposes. *In re Motion of AT&T Corp. to be Reclassified as a Non-Dominant Carrier*, *Order*, in CC Dkt. No. 79-252, FCC 95-427 (Oct. 23, 1995) [hereinafter *AT&T Non-Dominant Order*]. See also Doug Abrahms, *FCC Frees AT&T from Some Restrictions*, WASH. TIMES, Oct. 13, 1995, at B8; *Ruling Makes P-Rivalry Keener*, S.F. EXAMINER, Oct. 13, 1995, at B-1.

market prices.³ Specifically, firms with significant market power were to be classified as "dominant," while firms without such power were to be classified as "nondominant." Of particular importance, considerably more regulatory oversight and controls were imposed on any firms judged to be "dominant."⁴

When the FCC adopted this "dominant firm" system of regulation, AT&T was one of a very small number of long-distance firms competing in the United States. It supplied over ninety percent of the long-distance traffic, owned or operated nearly 100 percent of the transmission facilities used to carry long-distance calls, and enjoyed a unique dialing advantage over other long-distance competitors. Most importantly, in 1980, AT&T maintained control over the local exchange bottleneck facilities through which virtually all long-distance calls pass. In light of these market conditions, the FCC chose to classify AT&T as a dominant firm and put in place a regulatory apparatus designed to control the exercise of AT&T's perceived market power.

Today's long-distance market is vastly different from that of fifteen years ago. The 1984 divestiture of the Bell operating companies eliminated AT&T's control of local exchange bottleneck facilities.⁵ AT&T is now one of over 450 interexchange companies vying for the patronage of long-distance customers.⁶ Moreover, as the number of competitors has grown, AT&T's share of long-distance transmission

capacity has shrunk to some forty to forty-five percent,⁷ while its share of interstate minutes-of-use has fallen to fifty-eight percent.⁸ Indeed, MCI, Sprint and LDDS/Wiltel now have sufficient capacity in place to absorb thirty-two percent of AT&T's remaining share of the market within three months.⁹ The degree and intensity of rivalry among long-distance firms also has increased commensurate with the growth of competitors in the long-distance market. In 1994, a typical American household received some 330 advertising contacts from long-distance companies.¹⁰ The result of this heightened rivalry has been falling prices, improved quality, and an ever-expanding choice of innovative long-distance services.

Due to these changes in the long-distance market, the FCC has reclassified AT&T as a nondominant carrier. This reclassification, however, does not completely eradicate asymmetric regulation. Though the FCC declared that it was not the determinative consideration, AT&T has agreed to be bound by several residual controls which do not apply to its competitors.¹¹ For example, AT&T will provide a fifteen percent discount to low-income consumers for a period of three years.¹² Other constraints were negotiated for low-volume residential customers and for 800 directory assistance service.¹³ AT&T is also required to notify the Commission five days in advance of residential rate increases above certain levels.¹⁴ In addition, the Commission declined to extend the nondominant classification to AT&T's international ser-

³ Competitive Carrier Proceeding, *First Report and Order*, *supra* note 1.

⁴ The general policy of applying different regulatory constraints to firms competing within the same market is known as "asymmetric regulation" and has been the subject of some criticism. See, e.g., FCC, OPP WORKING PAPER 14, IMPLICATIONS OF ASYMMETRIC REGULATION FOR COMPETITION POLICY ANALYSIS (authored by John R. Haring) (1984); David L. Kaserman & John W. Mayo, *Market Based Regulation of a Quasi-Monopoly: A Transition Policy for Telecommunications*, 15 POL'Y STUD. J. 395 (1987). Asymmetric regulatory controls over the "dominant" firm have continued until very recently, even though traditional rate-of-return regulation of AT&T was replaced by price cap regulation in 1989. *In re Policies and Rules Concerning Rates for Dominant Carriers, Report and Order and Second Further Notice*, 4 FCC Rcd. 2873 (1989), *reconsidered*, 6 FCC Rcd. 665 (1991), *remanded sub. nom.* AT&T v. FCC, 974 F.2d 1351 (D.C. Cir. 1992). Thus, the change to price cap regulation did not signal an end to asymmetric regulation.

⁵ See *United States v. American Tel. & Tel. Corp.*, 552 F. Supp. 131 (D.D.C. 1982), *aff'd sub. nom.* *Maryland v. United States*, 460 U.S. 1001 (1983).

⁶ FCC, CC, INDUSTRY ANALYSIS DIV., TRENDS IN TELEPHONE SERVICE (1995) [hereinafter TELEPHONE TRENDS].

⁷ FCC, CC, INDUSTRY ANALYSIS DIV., FIBER DEPLOY-

MENT UPDATE, END OF YEAR 1993 (1994) [hereinafter FIBER DEPLOYMENT UPDATE].

⁸ FCC, CC, INDUSTRY ANALYSIS DIV., LONG DISTANCE MARKET SHARES, FIRST QUARTER 1995 Tbl. 3 (1995) [hereinafter MARKET SHARES].

⁹ T.L. Brand et al., An Updated Study of AT&T's Competitors Capacity to Absorb Rapid Demand Growth, in *Ex Parte Presentation*, *supra* note 1, Att. B.

¹⁰ Letter from C.L. Ward, AT&T, to William F. Caton, Acting Secretary, FCC, in CC Dkt. Nos. 79-252, 93-197, and 80-286 (Mar. 9, 1995), in *Ex Parte Presentation*, *supra* note 1, Att. S.

¹¹ AT&T Non-Dominant Order, *supra* note 1, para. 37. AT&T suggested these "voluntary" commitments in a series of *ex parte* letters to the Commission. See Letter from R. Gerard Salemm, Vice President of Governmental Affairs, AT&T, to Kathleen M.H. Wallman, Chief, Common Carrier Bureau, FCC, in CC Dkt. No. 79-252 (Sept. 21, 1995); Letter from R. Gerard Salemm, V.P.-Gov. Affairs, AT&T, to Kathleen M.H. Wallman, Chief, CC, FCC, in CC Dkt. No. 79-252 (Oct. 5, 1995).

¹² AT&T Non-Dominant Order, *supra* note 1, para. 84.

¹³ For example, low-volume residential customers will have a guaranteed rate, set at three dollars per month for the first 20 minutes of service during the first year. *Id.* para. 85.

¹⁴ *Id.* para. 86.

vices.¹⁴ Further, fifteen state regulatory commissions still continue to employ asymmetric regulation of intrastate long-distance calling.¹⁵ Thus, while it appears that asymmetric regulation of AT&T has ended, in fact it has not quite yet.

In light of these developments, it is appropriate, if not long overdue, to examine the issue of whether AT&T should continue to be subjected to any form of asymmetric regulation by the FCC or state regulatory commissions. Our purpose, then, is to examine whether AT&T has market power in today's market and whether any economic rationale exists for regulating AT&T's services differentially from its competitors. This examination is greatly facilitated by the publication of several empirical studies of the post-divestiture long-distance market and by a wealth of evidence that has accumulated at the state level over the past decade as individual state regulatory commissions have introduced more relaxed regulation and eliminated asymmetric regulatory policies. In this article, we will draw heavily upon both of these important sources of information.

Our approach is three-pronged. First, relying on the conventional tools of industrial organization/antitrust analysis, we assess whether AT&T has sufficient unilateral market power to warrant its continued classification as "dominant." Second, we review a complementary body of direct and indirect empirical evidence pertaining to the question of AT&T's market power. Finally, we examine a set of miscellaneous "competitive" issues that surround the question of "dominance." These issues initially arose at the state level and, for the most part, were resolved as many states have now moved to end asymmetric regulation in their long-distance markets.

On the basis of this analysis, as well as the other evidence examined herein, this paper concludes that AT&T does not possess the control over pricing or competitors that initially gave rise to its classification as a "dominant" carrier. As a result, neither consumers nor the tax-paying public are well served by the perpetuation of asymmetric dominant firm regu-

lation of AT&T. Specifically, an examination of standard market power criteria used in antitrust analyses provides compelling evidence that AT&T does not possess significant market power but, rather, faces effective competition from both existing and potential competitors. Moreover, an abundant amount of evidence drawn from other independent analyses of this market, as well as state and federal experimentation with relaxed regulation, provide further corroboration that AT&T faces effective competition. Finally, an examination of several auxiliary issues that have periodically surfaced regarding the merits of relaxed regulation reveal that the regulatory commissions can safely and confidently remove the dominant firm regulation governing AT&T.

II. THE ECONOMIC RATIONALE FOR TRADITIONAL REGULATION AND THE CRITERIA FOR RELAXED REGULATION

The entire post-divestiture period has been characterized by asymmetric regulation of AT&T at the federal level, on the grounds that it is "dominant." All other interexchange carriers are classified as "nondominant."¹⁶ In order for the FCC (or any regulatory agency) to establish and maintain the "dominant" classification of a firm, it is necessary first to define what is meant by this term. Economically, a firm is considered to be dominant if it possesses significant monopoly power.¹⁷ Alternatively, a nondominant firm can be said to be subject to effective competition.

This economic definition is entirely consistent with the regulatory definition of dominance first adopted by the FCC in 1980 in the Competitive Carrier Proceeding. The FCC stated that a dominant firm is one with "substantial opportunity and incentive to subsidize the rates for more competitive services with revenues obtained from its monopoly or near-monopoly services."¹⁸ The order further said that a nondominant firm is one without sufficient market power to

¹⁴ *Id.* para. 2. The Commission is also poised to begin a new proceeding on the entire interexchange marketplace to determine appropriate industry-wide regulation. *Id.* Thus, despite the significance of this Commission action, it remains to be seen whether it will lead to true deregulation of the interexchange market.

¹⁵ The FCC has lagged behind many state regulatory commissions in eliminating asymmetric regulation of long-distance carriers, as currently 35 states regulate all interexchange carriers equally. Letter from Alex J. Mandl, Exec. V.P., AT&T, to the Hon. Reed E. Hundt, Chairman, FCC (Nov. 17, 1994), in *Ex Parte Presentation*, *supra* note 1, Att. U (Status of Regulatory

Rules and Regulations of AT&T by Jurisdiction). Of these states, only three continue to regulate AT&T's earnings. *Id.* Thus, while 32 states have already implemented symmetric regulation without earnings constraints, AT&T is still hampered in substantial portions of the country. *Id.*

¹⁶ Competitive Carrier Proceeding, *First Report and Order* *supra* note 1, para. 27.

¹⁷ See generally F.M. SCHERER, *INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE* (2d ed. 1980).

¹⁸ Competitive Carrier Proceeding, *First Report and Order* *supra* note 1, para. 15 (emphasis added). The Commission also noted that a carrier would be classified as "dominant if it has

sustain prices either unreasonably above or below costs."¹⁸ Thus, the concept of market power provides the cornerstone of the FCC's classification system.

The question then, is how to determine whether a firm possesses a significant amount of market power.¹⁹ A prerequisite to analyzing market power is to define the relevant market for the firm's product or products. If markets are defined either too broadly or too narrowly, it is likely that the standard market power criteria will provide misleading information.²¹ The market definition process requires the delineation of a set of boundaries in both geographic and product space within which the market price is determined. A relevant market is a set of buyers and sellers whose purchase and production decisions establish the price at which the product or service is sold.

The economic criteria used to delineate market boundaries are built upon product and geographic substitutability on both the demand and supply sides of the market.²² In general, the greater the degree of supply-side or demand-side substitutability, the broader the relevant market.²³ In the case of long-distance telecommunications, the high degree of supply-side substitutability across services indicates that the relevant product market includes all interexchange toll services. Firms currently providing any one of the toll services (e.g., Message Telephone Service ("MTS")) could very easily begin to provide other toll services (e.g., Wide Area Telephone Service ("WATS")). Thus, the relevant product market to examine, and upon which to base policy, is the set of all interexchange services.²⁴

Similarly, the high degree of substitutability of vendors across geographic regions indicates that, as acknowledged by the FCC, the relevant geographic market encompasses the entire United States.²⁵ This determination is underscored by the fact that interexchange carriers with a point-of-presence ("POP")

in any local access transport area ("LATA") may supply originating service to any end office in that LATA by ordering access from the local exchange company. Accordingly, market coverage extends across both urban and rural areas, all of which are accessible simply by purchasing local exchange company access. Application of the standard economic criteria used to delineate market boundaries leads to the conclusion that the relevant market is all interexchange services sold in the United States.

This finding is extremely important for regulatory purposes. Where regulatory policy is founded upon the intensity of competition within the regulated firm's market or markets, determination of the correct market boundaries becomes crucial for two reasons. First, as noted above, market definition is a prerequisite to an accurate evaluation of market power. An inaccurate conclusion regarding market power is likely to result if an inaccurate market definition is employed. Erring in the direction of defining the market too narrowly generally tends to bias the analysis toward a finding of significant market power. An overly narrow market definition can result in an unwarranted conclusion that substantial market power is present.

Second, whether the regulated firm operates within a single market or multiple markets determines whether regulatory constraints should apply to the firm's overall operations or be tailored to those subsets of the firm's outputs that constitute separate markets. Where the firm sells its output within a single overall product market, a policy that applies different regulatory policies to different services within that market can have serious adverse consequences. Specifically, regulating one part of a market differently from other parts of the same market can distort market signals and create opportunities for strategic and inefficient uses of regulatory authority by competitors.²⁶

market power (i.e. power to control price)." *Id.* para. 26.

¹⁸ *Id.*

¹⁹ This question, of course, has a long tradition in the economics of antitrust. For a more detailed discussion of the economics of monopoly power and effective competition see DAVID L. KASERMAN & JOHN W. MAYO, *GOVERNMENT AND BUSINESS: THE ECONOMICS OF ANTITRUST AND REGULATION* ch. 4 (1995).

²¹ Although the market definition issue is one that can lead to errors in market power analysis, it is conceptually possible to err in the market definition analysis and still perform an evaluation of market power that yields correct outcomes. See William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937 (1981). As a practical matter, however, one is far more likely to get the economics right if the

market is correctly defined.

²² For a more detailed discussion of the market definition exercise see KASERMAN & MAYO, *supra* note 20, at 111-16.

²³ Because substitutability on either side of the market will significantly influence the price that is established, market boundaries are determined by the greatest degree of substitutability found — whether it is on the demand side or the supply side of the market.

²⁴ For an example of the wide acceptance of this broad product market definition see Competitive Carrier Proceeding *Fourth Report and Order*, *supra* note 1, para. 13 (stating that "interstate, domestic interexchange telecommunications comprise the relevant product market").

²⁵ *Id.*

²⁶ For a discussion on the strategic use of antitrust concern-

Once the relevant market has been determined, three fundamental factors are typically used to evaluate the extent to which any given firm in that market is subject to effective competition: the supply responsiveness (or elasticity) of other firms, market demand characteristics, and market share characteristics. Indeed, both academic literature and public policy bodies have widely acknowledged the relevance of these criteria in the assessment of market power.³⁷ Information on these three factors allows policymakers to reach informed judgments regarding the extent of competition in the market. As competition emerges, the need for traditional regulation wanes and, where effective competition is found to exist, a complete elimination of direct regulation is warranted.³⁸ In the paragraphs that follow, we briefly examine the role each of these economic characteristics plays in determining whether a firm possesses significant market power.

First, consider the role of the supply elasticity of competing firms. Any firm contemplating a price increase above the competitive level must consider the extent to which such an increase will encourage increased sales by its competitors. Business lost to these other firms will exert downward pressure on market price, thereby reducing (or, in some cases, completely eliminating or even reversing) the potential gains from the contemplated price increase. Thus, in a market where other firms can promptly meet customer demand by expanding their service availability in response to a competitor's price increase, every firm faces effective competition because any attempt to increase price to supra-competitive levels will be defeated by a substantial loss of sales to competitors.

Just as a firm must consider the supply response of firms already in the market, it must also consider the response of firms that are not currently providing service to this market but which could begin serving it if additional profit incentives were created by an increase in the market price.³⁹ Incumbent producers must recognize the response of potential competitors as well as current competitors in evaluating their ability to raise prices. As a result, in situations

where new firms can readily enter the market and capture sales, other firms' supply responsiveness to price changes may be quite high even if there is a limited number of firms currently serving the market.⁴⁰ Incumbent suppliers still face effective competition in this situation because any attempt to raise prices above the competitive level will result in the entry of additional firms with a corresponding increase in supply. Thus, an assessment of entry and expansion conditions in the relevant market is a critical part of the overall assessment of competition in a market.

Second, market demand characteristics play an important role in determining the market power of a firm. At the most basic level, the price elasticity of total market demand affects the extent of any firm's market power. Specifically, the more elastic the market demand, the more consumers view other goods and services (or reduced purchases of the service in question) as viable alternatives. As a result, a highly elastic market demand will limit substantially the extent of any firm's market power. Attempts to increase price will result in significant losses in sales as consumers switch to substitute goods or services or simply purchase fewer units.

In addition to market demand elasticity, three other characteristics of demand help to determine whether a given firm possesses market power: market growth, the distribution of demand, and the willingness of consumers to switch suppliers. First, *ceteris paribus*, growing markets are more likely to attract entry than stagnant or declining markets.⁴¹ Market growth reduces the likelihood of firm failures, and in turn lessens potential entrants' vulnerability. The heightened threat of entry and expansion in rapidly growing markets thus acts to restrict incumbent firms' ability to raise prices to above-competitive levels.⁴²

Next, in markets with a highly skewed demand distribution (i.e., a small proportion of customers accounts for a large portion of total demand), firms with high market shares have fewer opportunities to engage in supra-competitive pricing, because the rel-

to hamper competitive market processes see William J. Baumol & Janusz A. Ordover, *Use of Antitrust to Subvert Competition*, 28 J. L. & ECON. 247, 257-58 (1985).

³⁷ See, e.g., Landes & Posner, *supra* note 21, at 938-63; Simran K. Kahai, David L. Kaserman & John W. Mayo, *Is the Dominant Firm Dominant? An Empirical Analysis of AT&T's Market Power*, — J. L. & ECON. (forthcoming 1996). See also *In re Revisions to Price Cap Rules for AT&T Corp., Report and Order*, 10 FCC Rcd. 3009, para. 16 (1995) [hereinafter *AT&T Price Cap Order*] (applying these same criteria to the case of commercial long-distance services).

³⁸ Indirect regulation in the form of constraints provided by antitrust laws, of course, remains.

³⁹ Landes & Posner, *supra* note 21, at 938-63.

⁴⁰ *Id.* at 950.

⁴¹ See, e.g., J.C. Hause & G. Du Rietz, *Entry, Industry Growth and the Microdynamics of Industry Supply*, 92 J. POL. ECON. 733, 734-47 (1984).

⁴² Note, though, that rapidly expanding demand may exert upward pressure on prices in the most competitive of markets. JOSEPH E. STIGLITZ, *ECONOMICS* ch. 5 (1993).

atively few customers that account for a large share of the business being generated have a strong incentive to seek out alternative suppliers if their current provider raises prices.³³ The fear of losing a significant amount of business drives firms to charge competitive prices to these large customers, who, themselves may become competitors through resale. Similarly, a relatively skewed demand sends important signals to the various competitors that rapid market share gains (losses) are possible through efficient (inefficient) performance and pricing. This heightened vulnerability reduces incumbent firms' market power and lowers the likelihood that they would exercise any residual market power they might possess.

The willingness or reluctance of consumers to switch vendors of a good or service is also a fundamental consideration in analyzing a firm's ability to raise prices to supra-competitive levels. When a given firm's customers are relatively unwilling or unable to switch suppliers regardless of price, the firm in question has more latitude to raise price to the detriment of consumers. Alternatively, if consumers are willing and able to switch vendors, a firm will have considerably less latitude to unilaterally raise prices above competitive levels.

The third set of criteria traditionally used to examine market power revolve around market share. *Ceteris paribus*, a firm with a large market share could, by withholding some given portion of its output from the market, have a larger impact on total market supply and, hence, price than a firm with a small market share.³⁴ The measurement and interpretation of market share for the interexchange industry, however, must be approached with caution. The level and time path of AT&T's market share reflect not only normal marketplace developments but also the fact that AT&T was "endowed" with a very high market share at the time of the divesti-

ture.³⁵ That endowment, however, did not ensure that AT&T would have monopoly control over the supply of long-distance services. Thus, the information that, in some cases, might be contained in a market share number at a specific point in time is diluted substantially by the fact that AT&T began the post-divestiture period with an inherited high share. The competitive significance of a market share number, however, stems from a firm's ability (or lack thereof) to retain a given market share in the wake of an attempt to raise prices to above-competitive levels.³⁶ Firms whose market share declines over time in a market with stable (or falling) prices are very unlikely to have significant market power.

In this context, the presence of a high market share at a given point in time provides virtually no information on the incumbent firm's vulnerability to market share losses. Accordingly, any analysis of market share should examine the dynamic path of a firm's market share over time. Where the analysis reveals substantial market share losses, the observed vulnerability indicates significant limits on the firm's market power, regardless of the current level of its (statically-measured) market share. This is particularly true if significant price increases have not occurred. If the firm's market share has been vulnerable in the absence of substantial price increases, then it is extremely unlikely that the firm will be able to sustain its share in the presence of a significant price increase. The ability to maintain market share in the presence of a significant price increase is a true measure of market power.

Further, although minutes-of-use and revenue-based market share statistics are more readily available, in the case of the long-distance services market it is more meaningful to review market share measures based on the relative amount of transmission capacities held by interexchange firms. Capacity-based market share figures, combined with information on

³³ For empirical evidence that buyer concentration tends to promote more competitive pricing see Steven H. Lustgarten, *The Impact of Buyer Concentration in Manufacturing Industries*, 57 *REV. ECON. & STAT.* 125 (1975); Peter R. Cowley, *Business Margins and Buyer/Seller Power*, 68 *REV. ECON. & STAT.* 333 (1986).

³⁴ Whether such withholding of supply by a single firm will have a significant effect on market price also depends upon the other determinants of market power discussed in this section, such as the supply response of other firms.

³⁵ This "endowment" of a large market share did not, however, mean that AT&T was "endowed" with significant market power. Indeed, Judge Greene, who oversaw the divestiture of AT&T, concluded that:

[o]nce AT&T is divested of the local Operating Compa-

nies, it will be unable either to subsidize the prices of its interexchange service with revenues from local exchange services or to shift costs from competitive interexchange services . . . [w]ith the removal of these barriers to competition, AT&T should be unable to engage in monopoly pricing in any market.

United States v. American Tel. & Tel. Corp., 552 F. Supp. 131, 172 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

³⁶ "The right question is that of what happens to share, or, more generally, to a firm's business when monopoly profits are sought. The fundamental issue is whether competitors are able to grow." FRANKLIN FISHER, *INDUSTRIAL ORGANIZATION, ECONOMICS, AND THE LAW* 15 (1991).

customers' willingness to switch suppliers.³⁷ reveal whether existing firms can rapidly expand output or service availability in response to an attempted price increase. Consequently, capacity-based market shares are a more accurate indicator of the market's ability to enforce competitive pricing behavior.³⁸

It is important to understand that a firm cannot hold significant market power unless it has a large market share and other firms' supply responsiveness is low. That is, either a low market share or a high responsiveness of other firms' supply to price changes means that the firm is facing effective competition. If market share is low, significant market power cannot exist even if the responsiveness of other firms' supply to price changes is limited. Conversely, where other firms' supply is highly responsive to price changes, an individual firm cannot possess significant market power even if it holds a very high share.

The consequent need to examine both entry/expansion conditions and market share characteristics has been emphasized repeatedly by antitrust enforcement agencies.³⁹ State regulatory commissions also have recognized the importance of entry conditions and the corresponding need to look beyond market share figures in evaluating the intensity of competi-

tion. For example, the Virginia State Corporation Commission substantially reduced its regulation of interexchange carriers in 1984, reasoning that "the threat of competition is, in itself, a potent check on a firm's pricing policies."⁴⁰ Additional state-level recognition of the role of entry conditions in market power assessments is provided by the ongoing monitoring process by the California Public Utilities Commission of the intrastate interexchange marketplace. Their most recent assessment concludes that "[t]here are no significant barriers to entry that would discourage companies from competing in the California Interexchange market, and there are no barriers to exit."⁴¹ Thus, many state commissions have correctly incorporated the role of entry conditions in their evaluations of market power.

Totally specious conclusions may be reached if entry and expansion conditions are ignored and focus is placed solely on market share. It is necessary to look beyond market share.⁴² While market share is one of the economic determinants of market power, it cannot by itself demonstrate that a firm has significant control over market price. The other economic determinants, such as entry conditions, must also be conducive to providing such control.

³⁷ Consumers' high willingness to switch carriers is addressed *infra* at notes 54-56 and accompanying text.

³⁸ "Analytically, capacity seems to be the correct choice. The power of the dominant firm is limited not by the amount its competitors are currently manufacturing but by the amount they could manufacture in response to the dominant firm's price increase." Herbert Hovenkamp, *Antitrust Analysis of Market Power, with Some Thoughts About Regulated Industries*, in *TELECOMMUNICATIONS DEREGULATION: MARKET POWER AND COST ALLOCATION ISSUES* 7 (John R. Allison & Dennis L. Thomas eds. 1990).

³⁹ For example, the Federal Trade Commission has stated: Ideally, if we could measure all relevant demand and supply elasticities, we could arrive at relatively precise estimates of market power. Such evidence, however, is rarely, if ever, available and is not readily susceptible to direct measurement. Therefore, other criteria must be utilized. The most probative criteria include entry barriers; concentration trends (including volatility of market shares); technological change; demand trends; and market definition . . . [t]he issue of entry barriers is perhaps the most important qualitative factor, for if entry barriers are very low it is unlikely that market power, whether individually or collectively exercised, will persist for long.

FEDERAL TRADE COMMISSION, STATEMENT CONCERNING HORIZONTAL MERGERS, TRADE REG. REPORTS 20,901, at 20,902 (1993).

⁴⁰ Re SouthernTel of Va., Inc., *Final Order and Opinion*,

62 PUR4th 245, 256 (1984). In a similar vein, the West Virginia Public Service Commission wrote in 1986 that:

We realize that AT&T does enjoy a large share of the interLATA toll market; however, market share in and of itself is not the only criterion to be considered for regulatory purposes. Indeed we consider ease of entry, availability of customer choices and the presence of alternate carriers to be more important factors.

In re MCI Telecomm. Corp., *Generic Order*, 75 PUR4th 487, 498 (1986).

⁴¹ CAL. PUB. UTIL. COMM'N, THE COMM'N ADVISORY AND COMPLIANCE DIV., REPORT ON 1992 CALIFORNIA INTEREXCHANGE MARKET (1995).

⁴² Almost a half a century ago, Nobel Laureate Paul Samuelson noted that:

[t]he demand curve of any firm is equal to the demand curve of the industry minus the supply curve of the remaining firms, already in the industry or potentially therein. This being the case, it is easy to show that under uniform constant costs the demand curve for a firm is horizontal even though it produces 99.9 per cent of all that is sold . . . [e]conomically if the firm were to begin to restrict output so as to gain monopoly profit, it would cease to see 99.9 per cent of the output or even anything at all. Consequently, it would not attempt to do so, but would find its maximum advantage in behaving like a pure competitor. PAUL A. SAMUELSON, *THE FOUNDATIONS OF ECONOMIC ANALYSIS* 79 (1947).

III. APPLICATION OF THE COMPETITIVE CRITERIA TO THE INTEREXCHANGE SERVICES MARKET

The variety of data now available from several different sources permits an informed assessment of the extent of competition in the interexchange market. A review of the data, in light of the criteria identified in Section II, above, leads to the conclusion that the interexchange market is effectively competitive.⁴³ Neither AT&T nor any other competitor in the interexchange market has sufficient market power to control price in a manner adverse to the public interest. Let us examine each of the criteria identified above.

First, the available evidence unequivocally reveals that AT&T's competitors have a high responsiveness or elasticity of supply and that barriers to entry and expansion in this market are very low. This conclusion should not be surprising. The FCC and state regulatory bodies have liberally granted entry to long-distance firms, effectively eliminating all regulatory barriers to entry. This liberalization of prior entry restrictions is vividly demonstrated by the number of firms that have entered this market. As shown in Figure 1, over 450 competitors were providing long-distance service in the United States.⁴⁴ This flood of new entry, especially in the face of significant price decreases, clearly demonstrates that economic barriers to entry into this market are extremely low. Also, as seen in Figure 2, the total minutes-of-use reported by the non-AT&T long-distance competitors for interstate services has grown at an annual average rate of roughly twenty percent for the 1984-1994 period.⁴⁵ Thus, as new firms have entered this market, they have been able to expand their output (sales) rapidly. Another important factor in determining new firms' ability to expand out-

put (the elasticity of their supply) is the distribution of transmission capacity in the interexchange market. If existing firms' output were capacity-constrained, their ability to defeat an attempted AT&T price increase could be limited. If competitors have abundant capacity, however, both their ability and willingness to lure away customers and expand output is heightened, especially if consumers demonstrate a willingness to utilize their services.

Data collected by the FCC and other studies indicate that the capacity available for the transmission of long-distance traffic is abundant.⁴⁶ First, capacity expansion in this market has been rapid and significant. As shown in Figure 3, AT&T's competitors have aggressively built fiber-optic transmission capacity, and collectively they now own more activated capacity than AT&T.⁴⁷ It is also generally acknowledged that the large gap between activated fiber capacity and the potential capacity of the networks now in place creates a huge reserve of additional capacity that could rapidly and inexpensively be brought on-line should any firm in the market attempt to price anticompetitively. Moreover, the distribution of capacity across scores of interexchange carriers and "carriers' carriers" assures that no single firm can limit competition through exercise of "bottleneck" control of transmission capacity. Thus, competing carriers' ability to rapidly expand output in this market at low marginal cost is unconstrained due to the widespread availability of abundant transmission capacity.

By definition, where new firms have demonstrated their ability to enter a market and successfully capture market share over a protracted period of time, economic barriers to entry and expansion are low and, the responsiveness of their output to price is high.⁴⁸ Many new firms have entered the interexchange market, built large amounts of capacity,

⁴³ For similar conclusions see generally MICHAEL PORTER, *COMPETITION IN THE LONG DISTANCE MARKET* (1993); MICHAEL WARD, *MEASUREMENTS OF MARKET POWER IN LONG DISTANCE TELECOMMUNICATIONS*, FTC, BUREAU OF ECONOMICS STAFF REPORT (1995); Michael L. Katz & Robert D. Willig, *The Case for Freeing AT&T*, 7 REG. 43-49 (1983); Robert E. Hall, *Long Distance: Public Benefits from Increased Competition*, APPLIED ECON. PARTNERS (1993); see also David L. Kaserman & John W. Mayo, *Deregulation and Market Power Criteria: An Evaluation of State Level Telecommunications Policy*, in *TELECOMMUNICATIONS DEREGULATION: MARKET POWER AND COST ALLOCATION ISSUES* 65-102 (1990); David L. Kaserman & John W. Mayo, *Long Distance Telecommunications Policy: Rationality on Hold*, 122 PUB. UTIL. FORT. 18 (1988); Kahai et al., *supra* note 27.

⁴⁴ TELEPHONE TRENDS, *supra* note 5.

⁴⁵ MARKET SHARES, *supra* note 7, Tbl. 2.

⁴⁶ See, e.g., FIBER DEPLOYMENT UPDATE, *supra* note 6.

⁴⁷ *Id.* Tbl. 2.

⁴⁸ Recently, it has been alleged that the emergence of fiber-optic technology has created "huge" barriers to entry into the long distance market. See, e.g., Jerry Hausman, *The Long Distance Markets Today* (1993) (unpublished manuscript, on file with authors). Such a conclusion is erroneous for at least two reasons. First, the argument uses the wrong standard to judge the height of barriers to entry. Entry barriers should be measured by examining the economic characteristics of the costs for the *most likely mode of entry*. Thus, the fact that the construction and deployment of a nationwide fiber optic long-distance network is costly and involves considerable sunk costs is irrelevant, because that is not the preferred least-cost mode of entry. Profit maximizing firms will typically seek to enter markets via a least-cost strategy that minimizes their exposure to losses if the new venture fails. In the case of the long-distance industry, this

provided a wide array of long-distance telecommunications services, and expanded their output rapidly. This entry and expansion has benefited consumers by enhancing customer choice, creating downward pressure on prices, and providing heightened incentives for new service innovations. In addition, the high supply elasticity demonstrated by this observed behavior assures the long-run viability of competition in this market.

Turning to the second set of market power determinants, virtually all of the fundamental demand factors identified in Section II also unequivocally point toward the presence of effective competition. For example, demand growth has been quite strong in the long-distance market. Interexchange switched access minutes have grown nationally at an average rate of about ten percent annually since 1984.⁶⁰ This healthy growth rate has facilitated the emergence of new competitors, as entrepreneurs seek to garner a share of this burgeoning market.⁶¹ Indeed, this market growth has undoubtedly contributed to the observed entry of hundreds of new firms into the interexchange market. Moreover, the outlook for continued growth in telecommunications markets appears excellent.

The distribution of demand also points toward the likelihood of vigorous competitive rivalry among the market participants. The demand for long-distance calling is highly skewed. For AT&T, fifty-three percent of its residential customers account for ninety-three percent of long-distance revenues.⁶² This skewed demand distribution contributes to the vulnerability of interexchange companies' market shares. Any attempt by one interexchange company to raise prices above competitive levels would provide significant financial incentives for its largest and most profitable customers to switch carriers.

Consumers' willingness and ability to switch firms

also clearly shows that no interexchange firm can manipulate the market price. Consumers' ability to switch, of course, depends upon the ease with which competing firms can reach customers seeking to utilize their services. The equal access conversion process, which is now virtually complete, has facilitated this capability to provide customers a ready choice of carriers. By the end of 1993, over ninety-seven percent of the nation's telephone lines had been converted to equal access.⁶³ This conversion ensures that consumers have a readily available choice of a variety of long-distance carriers. Indeed, a recent survey of available choices for "1+" long-distance carriers found that residential customers typically have between ten and thirty long-distance carriers from which to choose.⁶⁴ Importantly, this competitive choice is available to customers in urban, suburban, and rural areas. As a result, substantial competitive choice is now ubiquitous throughout the United States. In today's environment, there is simply no substantial portion of the population without a significant choice of long-distance carriers.

Not only do consumers typically have a number of long-distance carriers from which to choose, but they also have demonstrated in droves that they are willing to exercise that choice. Indeed, according to industry data, in 1994 residential customers switched their long-distance carrier twenty-seven million times.⁶⁵ Taking "multiple switchers" into account, this represents carrier changes by over nineteen million customers in 1994, or about one in five households. Based upon the most recent data available, it appears that households will switch their long-distance company roughly thirty million times in 1995.⁶⁶ Moreover, it is important to note that it is not just high volume customers who switch to alternative long distance carriers. Specifically, in 1994, over ten million AT&T customers with average

least-cost path does not involve *de novo* construction of a fiber optic transmission network but, rather, entry by leasing existing capacity. As new entrants grow and expand their customer bases, a point is reached where it may become economical to construct their own transmission networks, depending on the price and availability of leased facilities. Second, regardless of any theoretical arguments regarding barriers to entry, the overwhelming marketplace evidence regarding actual entry and expansion belie the notion that any significant barriers to entry and expansion in the interexchange industry exist. For a more complete discussion see David L. Kaserman & John W. Mayo, *Long Distance Telecommunications: Expectations and Realizations in the Post-Divestiture Period*, in *INCENTIVE REGULATION FOR PUBLIC UTILITIES* 83 (Michael A. Crew ed., 1994).

⁶⁰ MARKET SHARES, *supra* note 7, Tbl. 1.

⁶¹ See, e.g., Catherine Arnst et al., *Phone Frenzy: Is There Anyone Who Doesn't Want To Be a Telecom Player?*, BUS

Wk., Feb. 20, 1995, at 92-97.

⁶² See *Ex Parte Presentation in Support of AT&T's Motion for Reclassification as a Nondominant Carrier*, in CC Dkt. No. 79-252 (Mar. 9, 1995) [hereinafter *Mar. 9 Ex Parte Presentation*] (chart labeled, "over half of Light Users currently fall below break even").

⁶³ TELEPHONE TRENDS, *supra* note 5, Tbl. 12.

⁶⁴ See Kaserman & Mayo, *supra* note 48, at 92-93.

⁶⁵ *Ex Parte Presentation in Support of AT&T's Motion for Reclassification as a Non-Dominant Carrier*, in CC Dkt. No. 79-252 (Feb. 8, 1995) [hereinafter *Feb. 8 Ex Parte Presentation*] (chart labeled "Competition - Customers' Freedom of Choice. See also *Hearings Before the Senate Comm. on Commerce, Science, and Transportation*, 104th Cong., 1st Sess. (Mar. 2, 1995) (prepared statement of John W. Mayo at 3)).

⁶⁶ *Ex Parte Presentation*, *supra* note 1, Att. 1 (chart labeled "The Long Distance Market").

monthly usage of less than ten dollars per month switched carriers.⁶⁶ Consequently, all consumers possess both the willingness and ability to switch between long-distance firms.

Turning last to the market share data, capacity-based estimates reveal that AT&T's current market share is roughly between forty and forty-five percent.⁶⁷ AT&T's competitors thus have more fiber optic capacity in place (measured by fiber-miles or route-miles) than AT&T. As a consequence of prevailing capacity and demand conditions, it has been estimated that AT&T's competitors could immediately absorb fifteen percent of AT&T's 1993 demand without incurring any capital costs.⁶⁸ Moreover, by utilizing spare switch ports and existing transport facilities, it is estimated that AT&T's competitors could absorb an additional seventeen percent of AT&T's 1993 traffic within three months.⁶⁹ Given the rapidly evolving nature of the electronics of switching and the commensurate increases in switching capacity, it is clear that the capacity of any given carrier can be expanded very rapidly by deploying newly available electronics. For example, relatively straightforward alterations in the electronics may boost several-fold the average number of DS-3's per fiber pair embodied in today's electronics.⁷⁰ Thus, for purposes of market power assessment, AT&T's capacity-based market share measurement is actually quite conservative.⁷¹ AT&T's output-based 1994 market share is somewhat higher, about fifty-eight percent of all interstate minutes-of-use.⁷² While these alternative measures indicate that AT&T is a major competitor in the interexchange services market, they are not out of line with the market shares of other firms (e.g., Campbell Soup Company) which operate in unregulated environments.⁷³

Moreover, AT&T's market share is not static. The temporal pattern of its market share reveals that AT&T's services are quite vulnerable to competitive

attacks by rivals even in the absence of an attempted price increase. At the time of divestiture, AT&T sold the predominant share of interexchange services in the United States. Figure 4 reveals that AT&T's minutes-of-use market share has declined almost continually throughout the post-divestiture period.⁷⁴ The fact that this decline has occurred over an eleven year period in which AT&T's prices have fallen dramatically (over fifty percent in real terms)⁷⁵ clearly indicates that AT&T will be highly vulnerable to even larger market share losses if it should ever fail to offer quality services at competitive prices.

Significantly, the aggregate trend of market share declines masks an even more revealing vulnerability of AT&T's customer base. As noted above, the long-distance marketplace is characterized by a considerable amount of customer churn. In 1994, some twenty-seven million households switched long-distance carriers.⁷⁶ This widespread propensity of many customers to switch carriers reveals the vulnerability of every long-distance firm to rapid market share erosion. AT&T's overall market share trend reveals only the net effect of household switching. The true vulnerability of AT&T to market share erosion is considerably greater than the net market share trend shown in Figure 4 suggests. On a monthly basis, residential customers are changing carriers over two and a half million times. Given such demonstrated willingness to change carriers, a single mis-step by AT&T could result in significant and dramatic share loss. This vulnerability to competitors is similar for the business segment, where churn levels are somewhat lower but revenue per customer is much higher. Such vulnerability clearly shows that the marketplace effectively disciplines AT&T's pricing behavior.⁷⁷ The principal conclusion to be drawn from the declining market share and substantial customer churn data is that, regardless of the historical

⁶⁶ *Id.* at 34.

⁶⁷ FIBER DEPLOYMENT UPDATE, *supra* note 6.

⁶⁸ See *Ex Parte Presentation*, *supra* note 1, at 2.

⁶⁹ *Id.*

⁷⁰ *Id.* at 6.

⁷¹ These estimates, proffered by AT&T, are claimed to be conservative since they are based solely on MCI, Sprint, and LDDS/Wiltel and ignore AT&T's other competitors in this area. *Id.* at 2.

⁷² MARKET SHARES, *supra* note 7.

⁷³ JOHN SUTTON, SUNK COST AND MARKET STRUCTURE: PRICE COMPETITION, ADVERTISING, AND THE EVOLUTION OF CONCENTRATION Tbl. M.8 (1991) (listing market shares in the prepared soups industry).

⁷⁴ The vulnerability of AT&T to market share losses appar-

ently extends well beyond the losses to MCI and Sprint. Indeed, recent data indicates that the most rapid growth in presubscribed lines in recent periods has come from the so called "third tier" carriers. KASERMAN & MAYO, *supra* note 20.

⁷⁵ WARD, *supra* note 43, at 11.

⁷⁶ See *supra* note 54 and accompanying text.

⁷⁷ AT&T's market share losses are not due to the ability of regulators to effectively restrain some innate advantage that AT&T might have were it freed from regulatory controls. Market share declines have occurred not only in states where AT&T has been asymmetrically regulated (e.g., New York), but also in states such as Virginia in which the regulatory commission has eliminated asymmetric regulation. See *supra* notes 40-41 and accompanying text.

"dominance" of AT&T in the market, no firm today is immune to large market share swings if it were to attempt to charge non-competitive prices.⁶⁶

In sum, the presence of numerous competitors, the demonstrated vulnerability of AT&T's market share, the widespread availability of transmission capacity, the minimal amount of economic barriers to entry, and the fundamentally pro-competitive demand conditions in the interexchange market clearly demonstrate the presence of effective competition. Moreover, several factors indicate that this competition exists not just at the aggregate level, but also for every toll service and each geographic area within the country. As pointed out in Section II, the degree of competition is only meaningful when discussed with respect to "the relevant market." In this case, the relevant market includes *all* interexchange toll services sold in the United States.⁶⁷ Thus, the finding of effective competition in the relevant market necessitates the conclusion that such competition exists for each service and geographic area within that market. Therefore, AT&T faces competitors in every geographic area within the United States and for every toll service it offers.⁷⁰

IV. COMPETITION IN THE INTER-EXCHANGE MARKET: OTHER EMPIRICAL EVIDENCE

The foregoing analysis provides clear evidence that the interexchange market is subject to effective competition. Corroborating evidence of such competi-

tion stems from two additional sources that we briefly review in this section. First, although it was possible in the immediate wake of the divestiture to argue (largely on conceptual grounds) that AT&T had very little market power, we now have had over ten years of actual marketplace experience on which to base this conclusion. Numerous states have experimented with relaxed and, in many cases, symmetric regulation of interexchange carriers. Second, the FCC has substantially relaxed its regulation of interstate business services. Such experimentation provides a natural opportunity to observe AT&T's market behavior in a less stringent regulatory environment and offers empirical evidence of AT&T's lack of market power. In addition, the passage of time and the advancement of empirical industrial organization methodologies since the divestiture have now created the opportunity to formally (econometrically) test the hypothesis that AT&T retains significant monopoly power. Specifically, it has become possible to estimate directly the degree of market power held by AT&T. In the three subsections that follow, we briefly describe the results of these two types of studies.

A. Relaxed Regulation: The State Evidence

Beginning with the Virginia State Corporation Commission's decision in late 1984 to grant full pricing flexibility to all long-distance firms, including AT&T,⁷¹ the vast majority of states now have relaxed regulation of intrastate interLATA toll service

⁶⁶ In this context, it is important to note that any explicit public policy linkage between AT&T's market share and the removal of the "dominant" label and asymmetric regulation would constitute very poor policy. Indeed, a policy that predicates an end to asymmetric regulation on AT&T's market share falling below some specific threshold reduces all firms' propensities to compete. AT&T would, under such a policy, be encouraged to refrain from aggressive competition in order to allow its market share to fall below the threshold level. It could do this, for instance, by raising prices, refusing to offer new services, or allowing quality to fall. At the same time, the firms attempting to prolong regulation of AT&T would face an incentive not to capture too much market share, so as to deny the "dominant" firm regulatory freedoms to fully and freely compete for customers' patronage. Thus, under a "market share threshold" policy, if competitors succeed in attracting customers away from AT&T, the "reward" is the deregulation of AT&T. In this scenario, the entire competitive process is put in reverse. A contest is created to see who can turn in the worst performance. This is the fundamental reason that the federal antitrust authorities have not established a singular focus on market share or created any market share threshold test for the existence of significant monopoly power.

⁶⁷ See *supra* notes 24-26 and accompanying text.

⁷⁰ As noted above, over 97% of all local exchange access lines in the United States have now been converted to equal access, ensuring dialing and technical interconnection parity between AT&T and its competitors in virtually every geographic location in the United States. TELEPHONE TRENDS, *supra* note 5, Tbl. 12. Even the tiny fraction of customers without equal access are protected from market power by the practice of geographically uniform pricing. This practice assures that the price of a long-distance call is the same regardless of whether the origination and termination locations are urban or rural, equal access or nonequal access. Because competition is pervasive in equal access areas with (typically) between 15 and 30 long distance carriers, nonequal access areas are also assured competitive pricing. Kaserman & Mayo, *supra* note 48, at 92-93. Moreover, even in areas where equal access is not yet implemented, it is routine for long-distance customers to be served by several interexchange carriers. See, e.g., *In re PSC's Investigation of the Regulation Status of Other Common Carriers and Contemplated Rulemaking*, MONTANA PUBLIC SERVICE COMM'N, Dkt. No. 94-25 (Direct Testimony of John W. Mayo)(June 10, 1994).

⁷¹ See *supra* note 40 and accompanying text.

to varying degrees.⁷³ As a result, it has become increasingly possible to examine empirically the cumulative evidence regarding the effects of such policies and to make informed judgments about the likely impacts of a further relaxation of regulatory controls. This type of evidence is extremely important in public policy proceedings, because parties opposed to relaxed regulation of AT&T have often argued that such a policy would lead to various sorts of undesirable consequences.⁷⁴ For instance, some parties have predicted that AT&T would use its newfound pricing freedom to charge monopoly prices, including differentiating between terms offered in contract tariffs for end users and those for resellers of telecommunications services to disadvantage its competitors.⁷⁵ Others fear that relaxed regulation would lead to predatory pricing, cross-subsidization, or reductions in universal service.⁷⁶ Given these predictions, it is informative to look at the experience with reduced regulation of AT&T. If these feared consequences have not emerged under reduced regulation, the predictions lose their credibility.

The available evidence strongly indicates that consumers have benefited substantially from reduced regulation. Indeed, industry performance has improved markedly with the relaxation of regulatory controls. It is of specific interest to regulatory commissions' current and ongoing deliberations that no evidence exists that in those state jurisdictions where policies of continued asymmetric regulation remain that competitive performance in the interexchange market has in any way improved. In fact, the availa-

ble evidence strongly suggests that such regulation has actually caused consumers to pay higher prices.

This conclusion is supported by several studies. For example, one study of the effects of regulation and competition on the prices of AT&T's intrastate toll rates found that "[t]he price of AT&T was found to be lower in states with pricing flexibility than in states where AT&T was operating under rate of return regulation . . . [h]owever, the price of AT&T service was lowest in states with complete deregulation."⁷⁸ This study is congruent with an earlier study by staff economists at the Federal Trade Commission ("FTC") in which the authors concluded, "(t)he results of this analysis suggest that AT&T's daytime, evening, nighttime and weekend rates are significantly lower in states that allow pricing flexibility than in states that use rate-of-return regulation."⁷⁹ Indeed, the study indicates that the price of a five-minute daytime intrastate toll call was, on average, 7.2 percent lower in states that allow AT&T increased pricing flexibility.⁸⁰

Together, these studies reject the hypothesis that anticompetitive pricing has occurred under relaxed regulatory policies and allay any fears of price escalation after regulation is relaxed. Indeed, the results demonstrate that relaxed regulation is pro-competitive, and generally leads to significant price reductions. The results also provide compelling evidence that AT&T lacks significant market power. If AT&T had such power, relaxed regulation should have led to higher (not lower) prices.⁸¹

Assessing whether any states have deemed it nec-

⁷³ See *supra* note 15.

⁷⁴ David L. Kaserman & John W. Mayo, *The Ghosts of Deregulated Telecommunications: An Essay by Exorcists*, 6 J. POL'Y ANALYSIS MGMT. 84, 85 (1986); Kaserman & Mayo, *Long Distance Telecommunications Policy: Rationality on Hold*, *supra* note 43, at 21-25.

⁷⁵ Comments of the Telecommunications Resellers Ass'n. to the Ex Parte Presentation in Support of AT&T's Motion for Reclassification as a Non-Dominant Carrier, at App. 1 (June 9, 1993).

⁷⁶ MCI Telecommunications Corporation has argued that it is premature to classify AT&T as non-dominant because it still has substantial market share, dominates in market segments seemingly "immune to the introduction of effective competition," and holds key patents for fundamental telecommunications systems. Comments of MCI Tel. Corp. to the Ex Parte Presentation in Support of AT&T's Motion for Reclassification as a Non-Dominant Carrier *passim* (June 9, 1995). MCI suggested that the FCC should at least reaffirm important "market rules" to ensure that AT&T does not avoid its legal obligations. *Id.* at 7-21. Four of the Regional Bell Operating Companies have argued that the major long distance telephone companies have established a cooperative pricing pattern in which they generally increase prices on one another's lead. Further Opposition of Bell

Atlantic, BellSouth, Pacific Telesis, and SBC Communications to the Motion for Reclassification of AT&T as a Nondominant Carrier (June 9, 1995) [hereinafter RBOC Comments]. See also William E. Taylor & J. Douglas Zona, *Analysis of the State of Competition in Long Distance Telephone Markets* (1995), in RBOC Comments, Att. E.

⁷⁸ Robert Kaestner & Brenda Kahn, *The Effects of Regulation and Competition on the Price of AT&T Intrastate Telephone Service*, 2 J. REG. ECON. 363, 372 (1990).

⁷⁹ Alan D. Mathios & Robert P. Rogers, *The Impact of Alternative Forms of State Regulation of AT&T on Direct-Dial, Long Distance Telephone Rates*, 20 RAND. J. ECON. 437, 437 (1989).

⁸⁰ *Id.* at 447.

⁸¹ One study reaches the conclusion that regulatory manipulation of access charges assessed to long-distance carriers, not competition, has been responsible for price declines in the interexchange marketplace. See William Taylor & Lester D. Taylor, *Postdivestiture Long-Distance Competition in the United States*, 83 AM. ECON. REV. 185, 189 (1993). This conclusion, as well as the underlying data and methodology embodied in the study, are, however, subject to serious debate. See, e.g., Letter from E. E. Estey, Regulatory V.P., AT&T, to William F. Caton, Acting Secretary, FCC (Mar. 21, 1995), in *Ex Parte Presentation*.